

## Asian Ambrosia Beetle (*Xylosandrus crassiusculus*)

### History

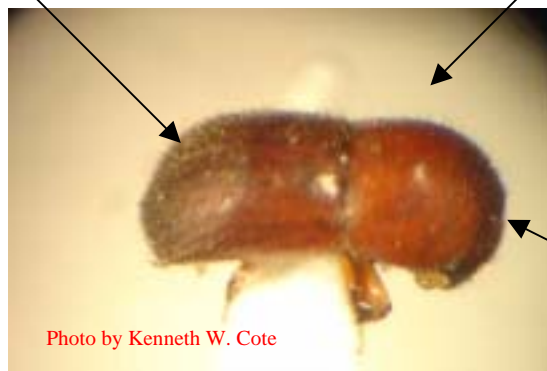
The Asian ambrosia beetle or granulate ambrosia beetle was first found in the U.S. during 1974 on peach trees near Charleston, SC. In 1983, populations were found as far south as Florida and as far west as Alabama. In 1992, the USDA captured adults with Lindgren funnel traps placed in Johnson, County on the southeast side of Indianapolis. In 1995 populations were discovered on *Prunus subhirtella* 'Pendula' in Oregon, and additional populations were detected in Virginia. In August of 2002, an adult was isolated from *Prunus subhirtella* 'Pendula' in Southeastern, Indiana. This was the first report of Asian ambrosia beetle in Indiana nursery stock.

**Distribution:** It is a subtropical species found in eastern Africa, India, Sri Lanka, China, Japan and SE Asia. In the United States it is found mostly from Zone 7 southward from Missouri to Texas and eastward towards Florida and north to Virginia. However, more recently adults have been captured in zone 6 as far north as central Indiana.

**Description: Adults:** Adults are small and have a reddish brown appearance with a downward facing head. Most individuals have a reddish head region and a dark brown to black elytra. Light colored forms that appear almost yellow have been trapped in Perry County Indiana. A granulated region is located on the front portion of the head and long setae can be observed on the back end of the elytra. Females are 2 –2.5 mm and males are 1.5 mm long. Populations are predominately female and males are rare and do not fly. **Larvae:** Larvae are C-shaped with a defined head capsule.

Short Hairs on Elytra

Reddish Head



Granulated Region

*Xylosandrus crassiusculus*

**Life Cycle:** Adult *X. crassiusculus* overwinter in galleries, but all life stages can be found in the galleries during the growing season. Initial flight usually occurs when daytime temperatures exceed 70°F in the spring months. During the summer, the life cycle is 55-60 days long and there are typically two generations in the southern United States. In the galleries, females mate with their brothers and then disperse to other host trees. The female is responsible for constructing the gallery. Populations are primarily female with at 1:10 male-female ratio. Males cannot fly and are used solely for mating purposes. Small galleries are produced inside infested trees are used for rearing symbiotic fungi, which *X. crassiusculus* use as a food source. *Ambrosiella* and *Fusarium* species have been isolated from *X. crassiusculus*, but the pathogenecity of these fungi has not been determined. Trees are often mass attacked and can rapidly decline. However, it is difficult to decipher if the abundant numbers of the beetles infesting the tree causes death or if the symbiotic fungi are clogging the xylem, thus resulting in tree death.

**Damage:** Damage usually appears as small toothpick like projections of frass sticking out of the trunks of infested trees. Frass spikes break off easily in the wind and may not always be seen. Abundant gumosis at multiple sites on tree trunks can occur on hosts such as *Prunus*, which have high levels of resin. However this type of surface damage can be easily confused with damage from shot hole borer (*Scolytus rugulosus*). Damage from ambrosia beetles will differ by going deeper into the wood than shot hole borers, which only cause damage in a tree just beneath the bark. Also, fungal staining from symbiotic fungi is often seen in wood adjacent to ambrosia beetle galleries. Asian ambrosia beetles usually mass attack trees and numerous exit holes can be observed. Perfectly round, 2 mm entrance holes can be seen when the gumosis and/or frass spikes are removed. Damage usually occurs on the main stem close to the ground, but can be found through out the tree in heavy infestations. Trees of 3 inch DBH or less are more readily infested than larger trees, but large host can be attacked. Heavy infestations usually lead to wilting, dieback and eventual tree death.

#### Frass Spikes



#### Multiple Sites of Gumosis



**2-mm Perfectly Round Hole**



**Fungal Staining Near Galleries**



**Galleries inside infested tree**

**Hosts:** Asian ambrosia beetle is considered an aggressive species and can attack trees that are not highly stressed. However, in some cases stress may play an important role in tree infestation. Generally, Asian ambrosia beetle will infest anything but conifers.

Azalea  
Beech  
Bradford Pears  
Chinese Elm  
Crape Myrtle  
Dogwood  
Golden Rain Tree  
Grape  
Hickory  
Honey Locust  
Japanese Maple

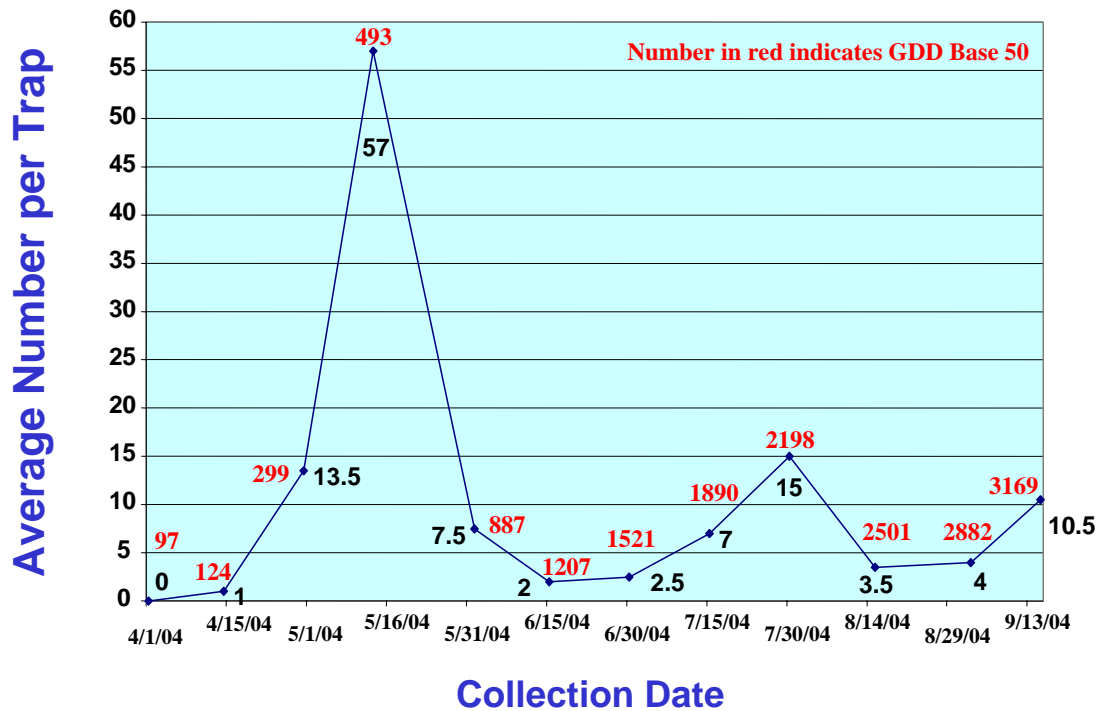
Japanese Snowbell  
Magnolia  
Mimosa  
Persimmon  
*Prunus sp.*  
Redbud  
Red Oak  
Sweet Gum  
Tulip Poplar  
Willow Oak

**Monitoring:** Damage usually appears in mid spring during peak flight periods and then again in fall. However, damage can be found at any time of the year. Look for frass spikes and multiple bleeding sites when leaves begin to expand in spring and again in fall. Additional monitoring should be conducted during periods of drought stress. Lindgren funnel traps with ethanol lures should be used to monitor flight periods.



## 2004 Indiana Trapping Data

### Number of *X. crassiusculus* per Collected Sample



# Indiana Counties with Asian Ambrosia Beetle



## Counties in Blue

Confirmed trap capture of Asian Ambrosia beetles

## Counties in Red

Confirmed damage from Asian ambrosia beetle

## Counties in Green:

Trees with suspect damage from Asian ambrosia beetle

## Control

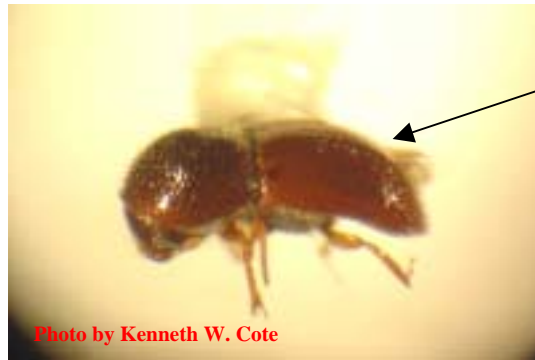
Control of Asian ambrosia beetle can be difficult. Infested trees should be left in the nursery 20-30 days after initial infestation in order to act as trap trees. This will attract additional beetles to the same tree and reduce the amount of new host damage. Once trap trees have been identified, other host trees in the area should be protected with a residual insecticide labeled for control of boring insects or bark beetles. When the 30-day trap tree period has expired, infested trees should be destroyed by fire.

## Pesticides

- Acephate
- Bifenthrin
- Chlorpyrifos
- Permethrin

*Mention of Trade Name implies no endorsement of a single product or associated company. **Always read pesticide labels before making any pesticide application.***

**Related Species:** *Xylosandrus compactus*, the black twig borer occurs mostly along the Gulf Coast states. *Xyloandrus germanus*, the black stem borer is found in Indiana and the Mid-West. Damage from this pest is similar to Asian ambrosia beetle, but entrance holes will only be 1 mm in size. Also, trees infested with this species tend to die at a slower rate than trees infested with Asian ambrosia beetle. Proper identification of these species may require a specialist.



**Elytra Shiny and abundant  
hairs absent**

*Xylosandrus germanus*

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